Service Manual
Advantage Access Systems
[AAM4-A and AAM4C-A]

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Advantor Corporation
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OVERVIEW

This *"Advantage Access System (AAM4-A, AAM4C-A) Service Manual"* provides general information, service and troubleshooting procedures for Advantor Advantage Access® Systems using Advantage Access Module 4A Communicator (AAM4C-A) host panels and Advantage Access Module 4A (AAM4-A) modules. This manual provides initial training and serves as a source of reference while on the job. Advantor Corporation recommends that you read this manual from front to back cover before attempting any service procedure.

See the *"Advantage Access System 4-A (AAM4-A, AAM4C-A) Installation Instructions"* (P/N 09830002) to answer any questions concerning system installation. Refer to the *"Advantage Access for Windows™ User's Guide"* (P/N 09830001) for option descriptions and programming.

MANUAL ORGANIZATION

This manual contains three sections, with each section providing information on a particular topic. This format provides easy reference to specific topics. The sections of the manual are:

Section 1, "Introduction to Access Systems," provides descriptions of Advantage Access System (AAM4-A) features and briefly describes their general operation.

Section 2, "Theory of Operation," provides operational theory on the Advantage Access modules and their major components. Also included in this section are AAM4-A and Communications Board pinouts.

Section 3, "Advantage Access System Service," provides troubleshooting techniques, procedures and charts to troubleshoot and solve most common system problems.

Appendixes: Included are a Glossary of Terms and Advantage Access System Management Functions. An additional appendix details many common access system Special Applications.

Alphabetical Index: For easily locating specific topics within the manual.

TECHNICAL ASSISTANCE

Advantor Corporation maintains a staff of engineers to provide assistance to Advantage Access installers and servicepersons. These personnel provide assistance from 8:30 a.m. to 8:00 p.m. (Eastern time) Monday through Friday (except holidays). Inside the continental United States contact the Advantor Service Department at (800) 654-6061. Please have your software serial number available when calling for support.

ACCESS SYSTEM BASICS

Before the arrival of access systems, high security buildings and areas relied on key locks and guards for protection. Key locks, while seemingly inexpensive, broke many a security manager's budget. Depending on the required security level, one lost or stolen key could mean replacing door locks and making new keys for every employee.

Access control systems changed all that. Since access cards are virtually impossible to copy, resolving problems arising from a lost or stolen card requires simply deleting the card from the access system's memory.

Card readers are the most visible component of every Advantage Access Control System. Any access control system user can tell you that they simply swipe their card through the reader to unlock a controlled door. What the users don't realize are the unseen functions that take place after they swipe their card.

A card reader is a device that reads a magnetic code embedded in a card. Each access card, similar to the Automated Teller Machine (*ATM*) cards many of us use at our banks, contains a unique number sequence. The card reader simply reads the number encoded in the user's access card and passes it on to the Advantage Access Module (AAM4-A) controlling the door.

The AAM4-A receives the card number and begins the process of verifying and cross checking the card number against a huge list of programmed options. These options can include:

* Is this card holder allowed to enter or exit this door?
* Is this card holder allowed entry on this day?
* Is this card holder allowed entry at this time during the day?
* Does this card arm or disarm the Advantage Access system?
* Does this card automatically trigger a programmed building management function, such as:
    - calling an elevator
    - activating lights
    - activating Heating/Ventilation/Air Conditioning *(HVAC)* units
    - opening a parking lot gate

All this may not seem too impressive. But consider that the AAM4-A completes this process on up to 10,000 different cards, with dozens of possible option combinations, and completes the entire process in just a fraction of a second.

If the card number passes all of the above checks, the AAM4-A unlocks the controlled door for the optioned amount of time, then relocks it after it closes.

The AAM4-A completes the process by logging the card number, door number, day, and the time of the event. The AAM4-A stores this activity in an activity log that can later be transferred to the Advantage Access computer to produce reports.

The access module's activity log is really a memory chip that locally stores up to 8,000 separate events. These events can include:

- power status alarms
- access panel armings and disarmings
- entries
- exits (can option the module to log free exits)
- invalid card reads
- alarms (i.e., *DOOR PROPPED, DOOR FORCED*, etc.)

When the activity log reaches 80% of its capacity (about 6,400 events), the access module sends the Advantage Access computer an *ACTIVITY BUFFER FULL* alarm. This alarm prompts the access computer to automatically upload the activity from the panel and all its modules.

NOTE: If the AAM-A Host panel is in the dedicated line configuration, Advantage Access *for Windows* version 3.0 contains an enhancement that automatically uploads all activity as it occurs.

The Advantage Access computer can use the uploaded activity logs to generate a variety of reports. Report information can include:

* Time and Attendance
* HVAC / facility usage
* Entry/Exit Reports
* Arm Disarm reports
* Alarm Activity Reports
* Status Reports

ADVANTAGE ACCESS SYSTEM DESCRIPTION

Throughout this document you will find four very common terms: system, buildings, panels and modules.

NOTE: See Appendix A, "Glossary of Terms" for definitions and descriptions of these and other Advantage Access terms.

When speaking of the Advantage Access ***system*** we mean the computer running the Advantage Access software, all the panels that report alarms and status messages, and all the modules that may connect to the panels.

A building is a facility that contains one or more access panels (see Figure 1-1). The Advantage Access programming software requires that you assign each host panel to a ***building***. Each building can contain from one to ten host panels.

NOTE: You must create buildings before you begin cardholder programming.

An Advantage Access 4 Communicator (AAM4C-A) acts as a ***panel***, hosting up to seven AAM4-A modules. The AAM4C-A panel communicates with the Advantage Access computer over a standard dial telephone line or a dedicated line.

The Advantage Access ***modules*** are standard AAM4-A modules. These modules can only communicate with the host panel, which in turn sends any alarms or activity to the Advantage Access computer.

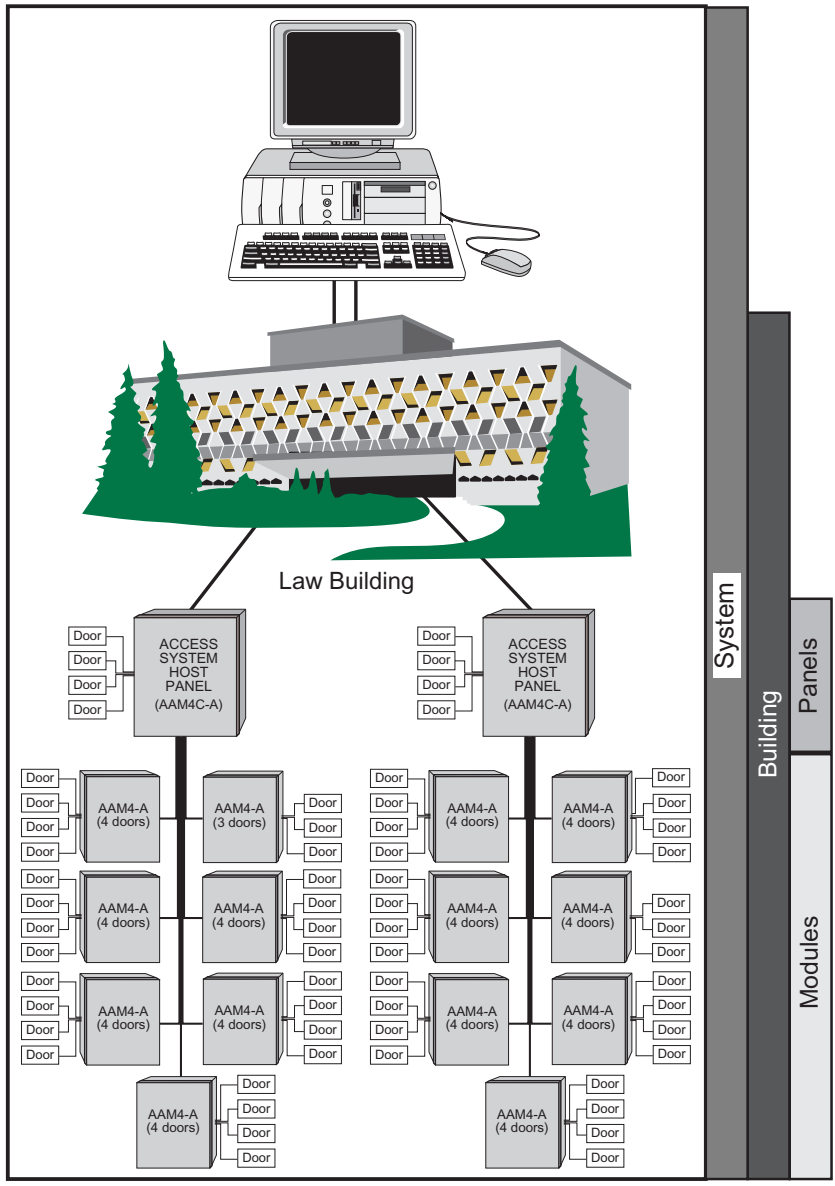
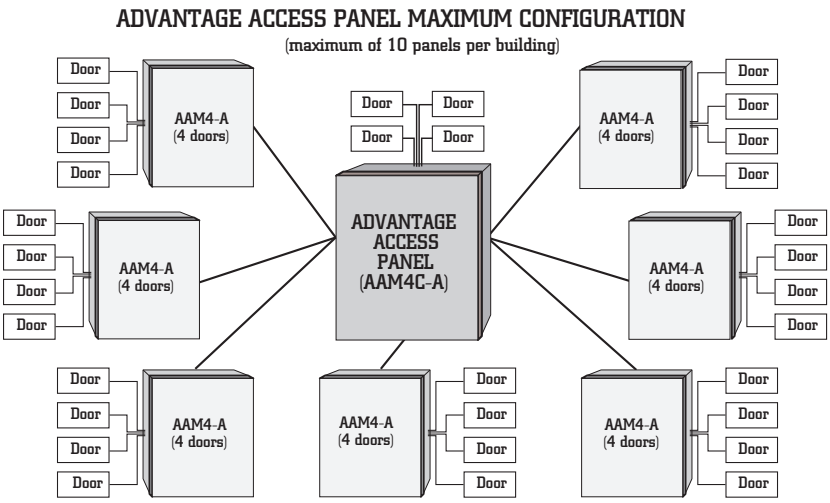


Figure 1-1. Advantage Access System

Each access module and panel can control four doors.

The maximum capacity of one Advantage Access panel and its associated modules is 32 doors (four host AAM4-A panel doors, plus 28 AAM4-A module doors). Figure 1-2 shows the maximum access panel configuration.



NOTE: Doors configured for anti-passback actually use two access module doors. One door (card reader) controls entries and the other controls exits.

Figure 1-2. Advantage Access Panel Maximum Configuration

Each Advantage Access Module consists of the following minimum equipment:

* an Advantage Access Module (AAM4-A) board
* a steel enclosure
* a plug mounted power transformer
* associated equipment (keypads, card readers, door switches, etc.)

Each access module controls and logs access through four facility doors. Associated with each controlled door are the following:

* a card reader port
* a C-3000 keypad port
* an LCD keypad
* a door alarm switch input
* an exit switch input
* a door lock output
* an auxiliary output

NOTE: Each AAM4C-A Host Panel can support up to 16 LCD keypads.

Each AAM4-A keypad port can support up to three C-3000 keypads. The access system also allows entry using standard keypad entries. A keypad **"ACCESS CODE + USER # + ENTER"** entry gives the same results as swiping a card through a card reader.

The access system checks the user's shift, door, and arm/disarm authority before granting access. A valid entry request lights all the C-3000 LEDs for two seconds. Invalid entry requests turn **off** all C-3000 LEDs.

For additional security, you can option AAMs to require both, a valid card read, **and** a valid access code.

Instead of a C-3000 keypad, each AAM4-A keypad port can support one 8-Relay Module (RMOD). Each RMOD provides control of up to 8 auxiliary equipment relays. Using the *Group Number* or *Time Control* options, RMODs give user cards the ability to control many applications. Applications include elevator control and building management functions, such as locking stairwell doors after a certain time.

All access system card readers must have *Wiegand* compatible outputs. Proximity and voice recognition devices are also available with Wiegand outputs. Several card reader manufacturers support Wiegand formats, including:

* Sensor Engineering
* IDI
* Corby
* Cotag

Each AAM4-A module has a battery charger, and automatically switches to battery operation in case of AC power failure. Each AAM4-A monitors the AC input and battery voltages, and notifies the Advantage Access computer in case of a system power problem.

Each access module provides the following features:

* Card controlled Access for up to 10,000 users.
* Eight access zones. Assign doors to different arming zones, or assign **all** doors to the same arming zone.
* Local user verification includes time, door(s), arm, and disarm authority.
* Automatic security system disarming with the first authorized access.
* Card controlled secure arming.
* Four arm/disarm authority levels.
* Optional *Anti-Passback* prevents several people from using one access card.
* 128 fully programmable “Time Shifts”.
* A time shift for monitoring scheduled rounds may be programmed for each door. Also useful for *employee check-in* for late shift safety.
* Schedule programmable outputs to turn on or off applications, such as Heating/Ventilation/Air Conditioning (HVAC) and lighting control.
* The AAM4-A's buffer memory locally logs up to 8,000 access, status, arm, and disarm events. Later sent to the Advantage Access computer for storage and report generation.
* Optional *Free Exit*, *Card Controlled* exit or *Man Trap* operation.
* Built in alarm monitoring for controlled doors.
* Each door interface includes a C-3000/RMOD port. Each port may drive up to three C-3000 keypads. Keypads provide independent zone status annunciation. Each port may alternately control one “8 Relay Module” (RMOD). The RMOD can provide elevator or multiple door lock control. You can install only one RMOD on each AAM4-A keypad port
* Monitored, self-contained power for the access system and door strikes.
* 10 general purpose alarm inputs to provide localized security.

ACCESS SYSTEM BASIC CONCEPTS

Cards

* 10,000 card numbers can be *Downloaded* to an AAM4-A.
* Card numbers are *16 bits* each, which means card numbers can range from 0 to 65,535.
* All cards contain either 8 bits or 16 bit *Site Codes*. This means site codes can range from 0 to 255 (8 bits) or 0 to 65,535 (16 bits).
* Some cards may also have one or two parity bits.

Periods

* To know when events should occur, the Advantage Access computer programs the AAM4-A with up to 128 different *Time Periods*.
* Periods are Time Slots that have a *Start Time* and a *Stop Time.*
* Each Time Period's options determine which days of the week the Time Period is active.
* Options also determine if a Time Period is active on Holidays.
* All AAM4-A modules connected to a panel share the same Time Periods.

Shifts

* A *Shift* is simply a combination of *Periods*. Many times a *Shift* may contain only one *Period.*
* *Shifts* allow programming *Split Shifts* where a user requires different access times on different days.
* *Shifts* allow controlled device activation for shorter times on certain days (such as weekends).
* AAM4-A modules use *Shifts* to accommodate flexible hours, verify access and schedule events.
* A different *Shift* may be programmed for each user, specific to each authorized door.

Employee Check In

* Each AAM4-A provides four *Employee Check In* shifts (one per door)
* Typically, a *Employee Check In* shift consists of several *Time Periods* (e.g., first 10 minutes of each hour).
* After the *Employee Check In* shift goes active (at the beginning of each hour in this example), a Guard, or any user assigned to *Group 16*, must have their card read before the *Employee Check In* shift goes inactive.
* If the Guard does not perform a card read while the *Employee Check In* shift is active, the module sends the Advantage Access computer an ***"Employee Check In"*** alarm.
* This option is useful for checking on an employee working alone.

Doors

* The AAM4-A has four card reader inputs and can control up to 4 locks.

Anti-Passback

* When configured for *Anti-Passback*, the AAM4-A restricts the use of a card so that it cannot be used for entry, then *passed back* to someone else for entry.
* A card used for entry must be used for exit before it may again be used for entry.
* Anti-Passback requires that two card reader inputs be used to control a single door. This is because the AAM4-A must know if the person is coming or going.
* On AAM4-A modules only Door 1 and Door 3 may be optioned for Anti-Passback.

  If Door 1 is optioned for Anti-passback:
  - The *Door 1* reader is used for entry
  - The *Door 2* reader is used for exit

  If Door 3 is optioned for Anti-passback:
  - The *Door 3* reader is used for entry
  - The *Door 4* reader is used for exit

ARM/DISARM with CARD Only

* When an authorized user swipes their card at a designated reader the system *Arms* (if disarmed), or *Disarms* (if armed).
* The card reader must not be used to control a door for entry or exit (i.e., the reader's *Door* must be optioned as inactive).
* The card reader must connect to Door 2 or Door 4 and the shift must be valid for the preceding door (Door 1 or 3 respectively).

Groups

* Each cardholder may be assigned to one of 16 *Groups*.
* When using RMODs (8 Relay Modules), each *Group* controls a specific set of relays.
* Special *Groups*:
  - **Group 1 -** Group 1 cardholders are exempt from Anti-Passback checks. Group 1 cardholders usually include management, maintenance or users who may exit through doors not controlled by the AAM4-A.
  - **Group 14 -** Relays selected for use by Group 14 will toggle OFF to ON (and vice-versa) each time the relay is selected by a cardholder (in any Group). See *"Relays"*.
  - **Group 15 -** Group 15 employees are *Temporary* employees, and are automatically denied access on the employee's optioned expiration date.
  - **Group 16** - Group 16 employees are Guards. See *"Employee Check In"*.

Relays

* Each AAM4-A can control up to 32 relays.
* Each *Door* has an associated C-3000 keypad port which may be used to control **EITHER** keypads **or** an RMOD.
* Each Group controls a group of option-selected relays.
* When the AAM4-A grants a user access, the relays controlled by the cardholder's Group *Turn On* for the optioned *"Door Unlock"* time.

Relay Toggle

* If you want a relay to *Latch On*, and stay *On* until the relay is selected by another valid card:
    - Select the relay *Latch* option box.
    - The relay will *Latch no matter* which *Group* commanded it.

ADVANTAGE ACCESS CONFIGURATIONS

You can install and option the AAM4-A boards and door equipment in any one of several configurations. Figures 1-3 through 1-9 show examples of the most common configurations.

ARM/DISARM USING ACCESS CARD ONLY

Card controlled entry with Free exit.

A card reader not controlling entry or exit for Door 2 or Door 4 can arm/disarm the security system with an authorized card read. See Figure 1-3.

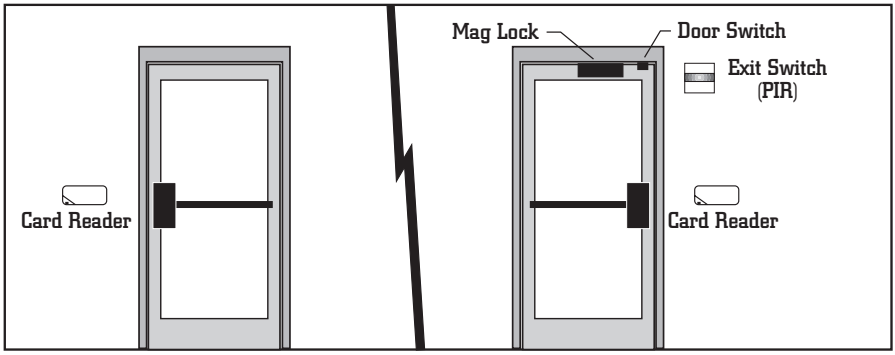


Figure 1-3. Free Exit with Card Controlled Arm/Disarm (No Keypad)

Required equipment:

* AAM4-A board
* Door Lock
* Door Exit Switch
* Door Alarm Switch
* 2 Card Readers

Operation:

Entry when zone is armed:

* User must be authorized to disarm system
* User's shift must be active
* User must have access authorization at this door
* Swipe card
* System disarms
* Door unlocks for optioned time period
* Door locks when door closes

Entry when zone is disarmed:

* User's shift must be active
* User must have access authorization at this door
* Swipe card
* Door unlocks for optioned time period to allow access
* Door locks when door closes

Exit:

* Activate "Free Exit" switch
* Door unlocks and remains unlocked for optioned unlock time after the exit switch restores
* Door locks when door closes (and exit switch restores)

Arming:

* User must be authorized to arm
* User must be authorized for this door
* Swipe Card (interior reader)
* System will arm (if there are no current loop violations)
* Alarm is sent if User has not closed the door before the *Door Delay* expires.

Option Selection:

* On the "Door" screen, select:
  - "Door Active": **Y**es for Door 1, **N**o for Door 2
    Yes for Door 3, **N**o for Door 4
  - Doors 1 and 2 must be assigned to the same zone, as must doors 3 and 4.
  - "Exit Switch is Installed," **Y**es

ANTI-PASSBACK OPERATION

On systems using Anti-Passback a card cannot be used for two successive entries or exits. Anti-Passback requires that a card used to enter the facility be used to exit before allowing another entry. See Figure 1-4.

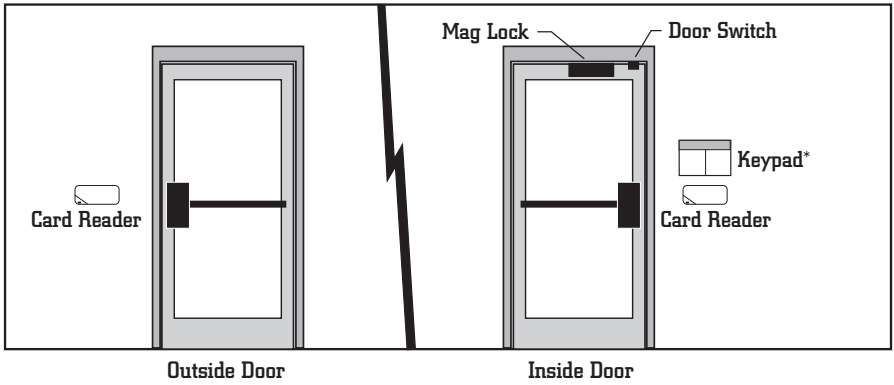


Figure 1-4. Anti-Passback Operation

Required equipment:

* AAM4-A board
* Door Lock
* Door Exit Switch
* Door Alarm Switch
* 2 Card Readers
* A C-3000 or LCD keypad (if arming from this door)

Operation:

Entry when zone is armed:

* User must be authorized to disarm system
* User's shift must be active
* User must have access authorization at this door
* Swipe card
* System disarms (if so optioned)
* Door unlocks for optioned time period to allow access
* Door locks when door closes

Entry when zone is disarmed:

* User's shift must be active
* User must have access authorization at this door
* Swipe card (must use card to exit before allowed to reenter)
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Exit:

* User must have access authorization at this door
* Swipe card (must enter using card before allowed to exit again)
* Door unlocks for optioned unlock time to allow exit
* Door locks when door closes

Arming:

* User must be authorized to arm and authorized access through this door
* Press C-3000 “AUTO ON” key, or the LCD keypad “ON” key
* Swipe Card
* System arms (if there are no current loop violations)
* Door unlocks for optioned unlock time after the system arms
* Door locks when door closes

Option Selection:

* On the “Door” screen, select:
  - Anti-Passback Operation, **Y**es
* On the “Door” screen, select for Door #2:
  - “Keypad is Installed,” **Y**es

ANTI-PASSBACK WITH CARD PLUS ACCESS CODE ENTRY

See Figure 1-5.

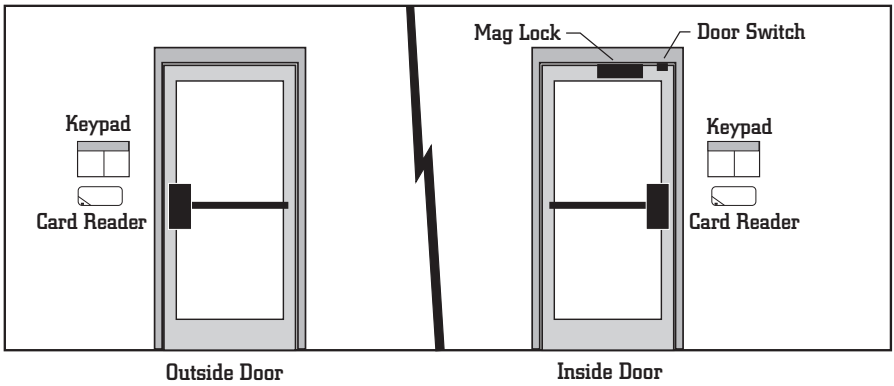


Figure 1-5. Anti-Passback with Card Plus Access Code Entry

Required equipment:

* AAM4-A board
* Door Lock
* Door Alarm Switch
* 2 Card Readers
* 2 C-3000 or LCD keypads

Operation:

Entry when zone is armed:

* User must be authorized to disarm system
* User's shift must be active
* User must have access authorization at this door
* Swipe card
* Enter full Access Code on C-3000 or LCD keypad
* System disarms (if so optioned)
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Entry when zone is disarmed:

* User's shift must be active
* User must have access authorization at this door
* Swipe card
* Enter full Access Code on C-3000 or LCD keypad
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Exit:

* Time shift is not checked for exits
* User must have access authorization at this door
* Swipe Card
* Enter full Access Code on C-3000 or LCD keypad
* Door unlocks for optioned unlock time to allow exit
* Door locks when door closes

Arming:

* User must be authorized to arm system
* User must be authorized access through this door
* Press the C-3000 “AUTO ON” key, or the LCD keypad “ON” key
* Swipe Card
* Enter full Access Code on C-3000 or LCD keypad
* System arms
* Door unlocks for the optioned door unlock time after the system arms
* Door locks when door closes

Option Selection:

* On the “Door” screen:
  - Anti-Passback Operation, **Y**es
  - Exit Switch is Installed, **N**o
  - Keypad is installed, **Y**es
  - Card + User # for Access, **Y**es
  - Local/Global Anti-Passback

CARD ACCESS WITH FREE EXIT

See Figure 1-6.

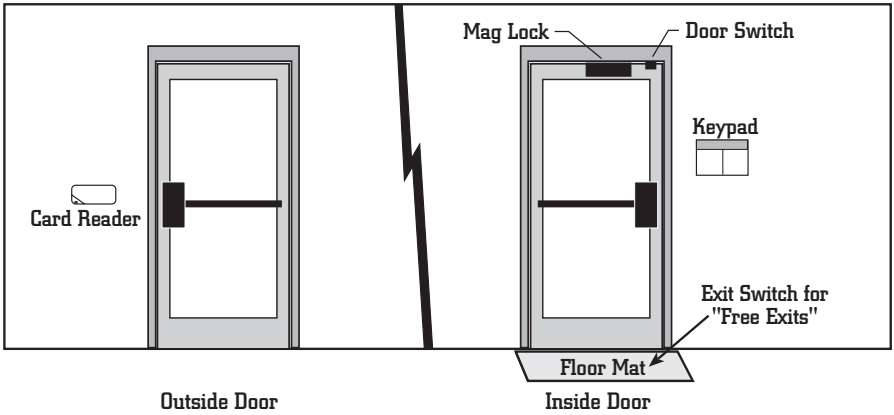


Figure 1-6. Card Access with Free Exit

Required equipment:

* AAM4-A board
* Door Lock
* Door Exit Switch
* Door Alarm Switch
* Card Reader
* C-3000 or LCD keypad *****(if arming from this door)

Operation:

Entry when zone is armed:

* User must be authorized to disarm system
* User's shift must be active
* User must have access authorization at this door
* Swipe card
* System disarms (if so optioned)
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Entry when zone is disarmed:

* User's shift must be active
* User must have access authorization at this door
* Swipe card
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Exit:

* Activate "Free Exit" switch
* Door unlocks and remains unlocked for the optioned unlock time after the exit switch restores
* Door locks when door closes (and exit switch restores)

Arming:

* User must be authorized to arm system
* Use C-3000 or LCD keypad to arm.

Option Selection:

* On the "Door" screen:
  - "Exit Switch is Installed", **Y**es.
  - "Keypad is Installed", **Y**es

CARD CONTROLLED ENTRY AND EXIT

See Figure 1-7.

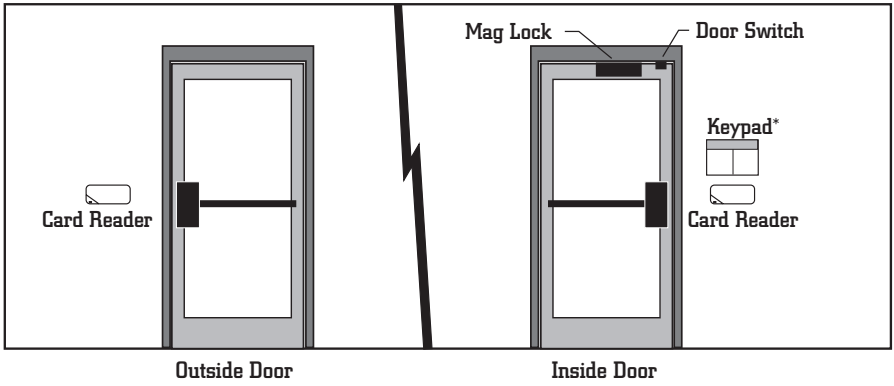


Figure 1-7. Card Controlled Entry and Exit

Required equipment:

* AAM4-A board
* Door Lock
* Door Alarm Switch
* 2 Card Readers (connected in parallel)
* C-3000 or LCD keypad *****(if arming from this door)

Operation:

Entry when zone is armed:

* User must be authorized to disarm system
* User's shift must be active
* User must have access authorization at this door
* Swipe card
* System disarms
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Entry when zone is disarmed:

* User's shift must be active
* User must have access authorization at this door
* Swipe card
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Exit:

* User's shift must be active
* User must have access authorization at this door
* Swipe Card
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes
* Alternately, if using a door exit switch the User can exit after activating the switch.

Arming:

* User must be authorized to arm system
* Press C-3000 "AUTO ON" key, or the LCD keypad "ON" key
* Swipe Card
* System will arm
* After the system arms, door unlocks for the optioned unlock time to allow exit
* Door locks when door closes

Option Selection:

* On the "Door" screen
  - "Keypad is Installed", **Y**es

ACCESS REQUIRING CARD PLUS FULL ACCESS CODE

See Figure 1-8.

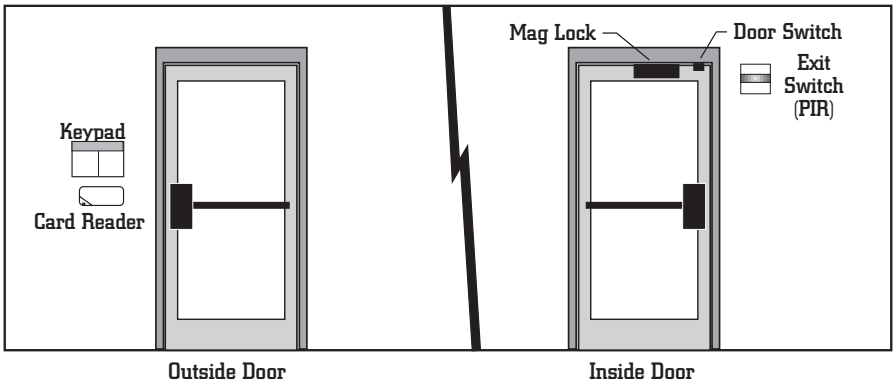


Figure 1-8. Access Requiring Card and Full Access Code

Required equipment:

* AAM4-A board
* Door Lock
* Door Exit Switch
* Door Alarm Switch
* Card Reader
* C-3000 or LCD keypad

Operation:

Entry when zone is armed:

* User must be authorized to disarm system (if so optioned)
* User's shift must be active
* User must have access authorization at this door
* Swipe card
* Enter full Access Code on C-3000 or LCD keypad
* System disarms
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Entry when zone is disarmed:

* User's shift must be active
* User must have access authorization at this door
* Swipe card
* Enter full Access Code on C-3000 or LCD keypad
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Exit:

* Activate “Free Exit” switch
* Door unlocks and remains unlocked for optioned unlock time after the exit switch restores
* Door locks when door closes (and exit switch restores)

Option Selection:

* On the “Door” screen, select:
  - Exit Switch is Installed, **Y**es
  - Keypad is installed, **Y**es
  - Card + User # for Access, **Y**es

CARD ACCESS STARTS ENTRY DELAY FOR KEYPAD DISARM

See Figure 1-9.

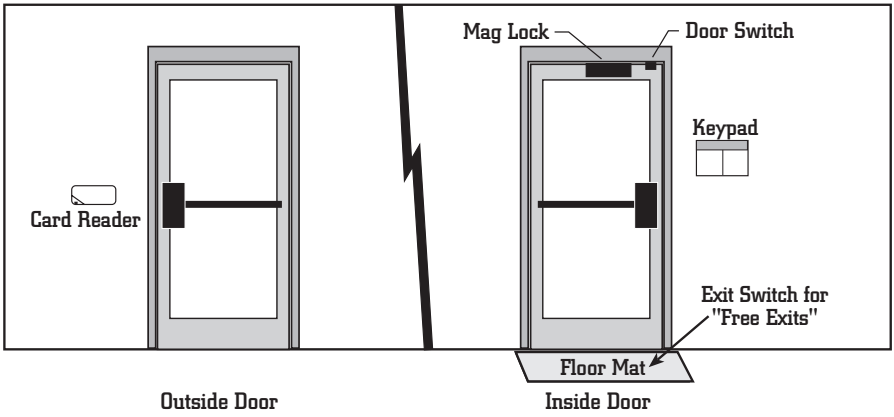


Figure 1-9. Card Access Starts Entry Delay for Keypad Disarm

Required equipment:

* AAM4-A board
* Door Lock
* Door Exit Switch
* Door Alarm Switch
* Card Reader
* C-3000 or LCD keypad

Operation:

Entry when zone is armed:

* User must be authorized to disarm system
* User's shift must be active
* User must have access authorization at this door
* Swipe card
* Door unlocks for optioned unlock time to allow access and Entry Delay period begins when the door opens
* Enter full Access Code on any C-3000 or LCD keypad in the same Zone
* System disarms

Entry when zone is disarmed:

* User's shift must be active
* User must have access authorization at this door
* Swipe card
* Door unlocks for optioned unlock time to allow access
* Door locks when door closes

Exit:

* Activate “Free Exit” switch restores
* Door locks when door closes (and exit switch restores)

Arming:

* Use C-3000 or LCD keypad to arm.

Option Selection:

* On the “Door” screen, select:
  - “Exit Switch is Installed”, **Y**es
  - “Keypad Installed”, **Y**es
  - “Card Access Starts Entry Delay”, **Y**es

Alternative:

To force the User to enter their unique access code, install a keypad inside the door and option the "*Card + Access Code for Entry*" as **Y**es.

The door will unlock after the card read and the entry delay will start when the door opens. The system will send an alarm if the User does not enter their access code on the keypad before the delay times out.

INTRODUCTION

This section will familiarize you with the general electronic operation of Advantage Access Modules (AAM4C-A and AAM4-A) and their peripheral devices. You should have a general understanding of the entire access system before reading this section.

GENERAL OPERATION

ENTRY PROCESSING

The access module performs many of its control functions without host panel assistance or communication. With the host AAM4C-A panel armed, the AAM4-A performs the following with each card read:

* verifies that the card number and site code are valid
* verifies the user's authority to disarm the system
* verifies the user's authority to enter at the current time.

After user verification, the card reader LED flashes (indicating disarm request processing) until the panel disarms and unlocks the door. The card reader LED changes to Green (or turns OFF if single colored) for two seconds, indicating an unlocked door and that it is okay to enter.

If the panel denies access to a recognized card, the card reader LED turns Yellow for two seconds (multi-color LEDs only). AAM4-A buffer memory stores the user number and the reason for the denial for later transmission to the Advantage Access computer.

If the door is at its armed security level, forcing the door open or leaving it open too long results in an alarm. Controlled doors may have any of the following security levels:

* "24-Hour" security (always armed)
* "Full" security (armed while the system is armed)
* "OCCUPIED" security
* never armed

After disarming, the access module reads each card, validates the entry time, and unlocks the door for the optioned time period. With each successive access, the card reader LED turns Green (OFF if single-color) for two seconds.

To provide greater access security, the AAM4-A *Controlled Entry/Exit* option can require the user to enter an employee code at the C-3000 or LCD keypad.

DISARMING THE PANEL WITH A CARD

With the panel armed at Full Security, AAM4-A automatically disarms after processing a valid access request. If the host panel is "Auto arming", the panel contacts the Advantage Access computer and reports the disarm status. If the host panel is "Secure" arming, the host also reports the employee number disarming the panel.

EXIT PROCESSING

AAM4-A provides two controlled door exiting options:

* *FREE* exit (activate a switch at the door)
* *CONTROLLED* entry/exit (each exit requires a card read)

For greater security, the AAM4-A *Controlled* exit option can also require the user to enter their access code at the C-3000 or LCD keypad. *Controlled* exits automatically log locally, and you can option *Free* exits for logging.

ARMING THE PANEL WITH A CARD

Auto, No-Dial, and Secure systems all arm by pressing the C-3000 keypad **AUTO ON** key then passing a valid card through the card reader. If optioned for *Quick Arming*, the access panel does not require a card read.

NOTE: When a card reader is not used for door control (i.e., inactive door), users may arm/disarm the system by swiping a valid card through the reader.

If Secure arming, the AAM4-A transmits the host panel the user number with the arming request. The host panel then transmits the user number to the Advantage Access computer for verification. During the computer verification time the door remains locked and the card reader LEDs flash Red and Green (or ON and OFF if single color). When the access computer grants arming approval, the system arms, the door unlocks, and the card reader LEDs turn Green (or turn OFF if single colored).

When the programmed Door Unlock Time expires, the card reader LED turns RED and the door locks.

ACCESS SYSTEM ACTIVITY LOG

The AAM4-A stores all power status messages, entries, invalid card reads, alarms, etc. in a buffer memory that can store 8,000 events. When the buffer is 80% full the AAM contacts the Advantage Access computer with a *"ACTIVITY BUFFER FULL"* alarm. The AAM4-A reports additional *"ACTIVITY BUFFER FULL"* alarms as each 5% of the remaining buffer fills. If it reaches 100% capacity, the buffer drops the oldest events as new events occur.

NOTE: The Advantage Access computer automatically uploads the Activity Log upload after receiving a *"ACTIVITY BUFFER FULL"* alarm.

If the AAM-A Host panel is in the dedicated line configuration, Advantage Access *for Windows* version 3.0 contains an enhancement that automatically uploads all activity as it occurs.

ALARM INPUTS

All AAM4-A alarm inputs consist of 5VDC sourced through a 1Kohm resistor on the AAM4-A board. This voltage passes out of the loop "AL#" pin, through the loop, the 1Kohm End-of-Line (EOL) resistor, and back to system ground at the "GND" pin. The AAM4-A monitors the "AL#" pin voltage relative to ground to determine the loop's status.

You can option and wire all alarm inputs (except Tamper) as trouble reporting. Trouble reporting inputs must contain a 1Kohm ($\pm$100 ohms) EOL resistor at the farthest point in the loop. This allows detection of both alarm and Trouble conditions.

TROUBLE REPORTING (SUPERVISED) ALARM INPUTS

The non-alarm voltage at the "AL# pin measured to ground is between 1.5 and 3.5VDC. A Trouble reporting loop cannot contain both N/O and N/C devices. The AAM4-A considers a N/O loop violated if the input pin voltage is less than 1.5VDC. The AAM4-A reports a *"TROUBLE WIRE"* alarm if the input pin voltage is greater than 3.5VDC, indicating a loop wiring break.

The AAM4-A considers a N/C loop violated if the input pin voltage is greater than 3.5VDC. The AAM4-A reports a *"TROUBLE WIRE"* alarm if the input pin voltage is less than 1.5VDC, indicating a shorted loop.

NON-TROUBLE REPORTING ALARM INPUTS

Inputs optioned as Non-Trouble reporting do not require an EOL resistor. On N/O loops, an alarm condition exists when the loop input pin ("AL#") voltage goes below 1.5V. An alarm condition exists on N/C loops when the voltage goes above 3.5V.

Inputs optioned for both N/O and N/C operation require an 1KEOL. The EOL allows the AAM4-A to determine when a non-alarm condition exists. Trouble reporting is not possible on N/O-N/C combination loops.

TAMPER ALARM INPUT

The Tamper loop on jack J1 is the only non-optionable alarm loop. The Tamper loop is always N/C with no trouble reporting capability and no EOL resistor.

The Tamper loop consists of 5VDC sourced through a 1Kohm resistor on the AAM4-A. This voltage passes out the loop "TP+" pin, through the loop to system ground at the "GND" pin. Monitoring the "TP+" pin voltage relative to ground determines the loop's status. A loop violation exists if the input pin voltage is greater than 3.5VDC.

Wire all tamper connections in series to the AAM4-A Tamper loop pins. If not using the tamper loop, place a jumper between the Tamper loop connection.

DISABLED ALARM INPUTS

The Advantage Access computer operator can disable any AAM4-A alarm loop using the *Disable* command.

NOTE: "24-Hour Security" loops must be in alarm to be disabled.

A disabled 24-Hour Security loop remains disabled each time the panel arms/disarms, but sends the Advantage Access computer a *"Disabled Zone"* alarm. The account number and the disabled loop's alarm code display on the screen to remind the operator of the loop's disabled state.

Disabled 24-Hour loops reenable immediately on the loop's restoral. Non-24-Hour loops automatically reenable when the panel disarms. When in contact with the Advantage Access computer, the operator may enable all disabled control panel loops using the *Enable* command.

INACTIVE ALARM LOOPS

Unused alarm loops are optioned as INACTIVE. As such, they do not cause any alarm violations and do not require installation of EOL resistors or jumpers.

AUXILIARY OUTPUTS

The AAM4-A Auxiliary Outputs are open collector circuits. This means that while inactive, the "AX#-" pin has no ground continuity, leaving no current path. When active, the output provides continuity from the "AX#-" pin to system ground. This provides a current path capable of handling up to 100mA.

Auxiliary Outputs 1 through 4 are used with the four controlled doors. You can find these Auxiliary Output options on the Door auxiliary output screen.

Auxiliary Outputs 5 and 6 are general use outputs. You can find these options on the Module screen.

ALARM LOOPS OPTIONED AS SPECIAL INPUTS

You may option any programmable AAM4-A alarm loop(s) as a special input. Special inputs include connecting a keyswitch to a loop to provide additional arming options. Special inputs cannot report alarms.

GLOBAL FREE EXIT INPUT

The Access Module jack J1 pin labeled *FR+* is the optional, normally-open, dry contact Global Free Exit input connection from an external fire control panel. Connect the fire control panel output to *FR+* and an available GND on J1.

Any time the Access Module detects a short on this input it automatically unlocks any controlled doors that are optioned for *"Door Unlock With FIRE Alarm."* The Access Module also alerts the system operator by sending the Advantage Access computer a *"FIRE"* alarm.

The Access Module holds these doors unlocked until the short condition restores to normal condition.

THE AAM4-A POWER SUPPLY

The AAM plug-mount transformer converts 120VAC to 16.5VAC, for use by the AAM4-A. The AAM further converts and regulates the 16.5VAC to 13.5VDC. The 13.5VDC prevents AC alarms and supplies the battery charging current. Regulation circuitry also converts the 13.5VDC into 12VDC and 5VDC to provide AAM4-A operating power. Combined with the AAM4-A's 12VDC battery, this provides AAM4-A with two power sources.

The AAM4-A board's power circuitry produces 1.9 Amps (1,900mA), of which the AAM4-A board itself requires 0.3 Amp (260 mA). Therefore, the combined 5VDC and 12VDC output cannot exceed 0.6 Amps (640mA). The total current draw from the attached door locks cannot exceed 1.0 Amps (1,000mA).

A 1.4A Positive Temperature Coefficient (PTC) current limiting device protects the lock power output against short circuits. When the current exceeds the PTC rating, the PTC opens until the load is removed. The PTC returns to normal operation (closes) a few seconds after removing the overload condition.

POWER STATUS ALARMS

The AAM4-A automatically switches to battery operation when AC power drops below 80% of its rated value (95VAC). One minute after the AC power loss it sends the Advantage Access computer a *"AC POWER DOWN"* alarm. The one minute delay prevents mass AC alarm reports during short duration power outages. AAM4-A does not report an AC alarm if power restores before the one minute delay. AC power restoral to 100VAC for at least one minute causes transmission of a *"ac power up"* message.

If during an extended AC power loss the battery discharges to 11VDC, the AAM4-A sends the Advantage Access computer a *"LOW BATTERY"* alarm. This informs the operator that AC power is still off and the AAM4-A battery is nearing discharge.

If AC power does not restore after a *"LOW BATTERY"* alarm, AAM4-A generates a *"DOWN PANEL"* alarm when the battery discharges to 10VDC. This alarm shows that AAM4-A has insufficient power to operate reliably and is powering itself down.

The AAM4-A itself remains powered down until AC power restores. However, power to door locks and Auxiliary Output devices does **not** turn off after a *"DOWN PANEL"* alarm. The load from devices connected to these AAM4-A outputs can totally drain the battery.

After a *"DOWN PANEL"* alarm, AAM4-A (only) sends an *"PANEL UP"* alarm when AC power restores.

NOTE: With all power removed, AAM4-A can hold options in memory for a minimum of 24 hours. However, the buffer memory dumps any activity events.

COMMUNICATIONS

AAM4-A TO HOST AAM4C-A COMMUNICATIONS

The AAM4-A module and host AAM4C-A panel communicate via an *RS-485 differential bus transceiver*. This means the host and all modules connect to the same two wires. The host sequentially requests a response, or *polls*, each module. After requesting a response, the host stops transmitting and listens for a response. During this time, the polled module turns on its transmitter and sends the host any new information while the other modules listen.

Since only one device can transmit at a time, this is *half duplex* communication. You must maintain proper communication wiring polarity between the modules and host. The communications wiring may be wired in parallel to other modules.

The RS-485 transmit levels are 5V and 0V. Depending on the number of installed modules, the host typically communicates with each module twice per second.

MODULE TO CARD READER COMMUNICATIONS

AAM4-A module to card reader communications are also via two communication wires, but using a different communication format. The communication lines consist of a "1's" line and a "0's" line. On a card read, the reader converts the card code into a sequence of pulses on the two lines.

Both the '1' and '0' lines are open-collector lines, normally at 5V. Reading a '1' causes a 0V pulse on the '1' line, and reading a '0' causes a 0V pulse on the '0' line.

MODULE TO C-3000 KEYPAD COMMUNICATIONS

Each AAM4-A module has one keypad port per door. Each keypad port may contain up to three Control 3000 (C-3000) keypads. Four wires connect each keypad to the AAM4-A: +12VDC, GND, Clock and Data. The AAM4-A provides the +12VDC, GND, and Clock, while the Data line carries bidirectional 5V data to and from the keypad.

The AAM4-A sends each keypad 16 clock cycles 30 times a second. As the clock cycles enter the keypad, AAM4-A data is latched into the keypad, and data is transmitted from the keypad back to the AAM4-A.

On each sequence, the host panel determines which keys (if any) have been pressed, lights the appropriate LEDs, and determines if the beeper should be activate. The AAM4-A pauses 5 msecs. after receiving the clock cycles to allow the keypad to prepare for the next sequence.

MODULE TO 8 RELAY MODULE (RMOD) COMMUNICATIONS

Communications between the AAM4-A module and 8 Relay Modules (RMODs) are identical to C-3000 keypad communications.

HOST PANEL TO LCD KEYPAD COMMUNICATIONS

Communications between the Host AAM4C-A panel and all LCD keypads are identical to AAM4-A to Host AAM4C-A communications. It should be noted that regardless of where the LCD keypad resides, the Host AAM4C-A panel controls all LCD keypad communications.

AAM4C-A TO ADVANTAGE ACCESS COMPUTER COMMUNICATION

Advantage Access systems use a telephone data communications called asynchronous communications. This means that data messages are transmitted/received as they occur, rather than in a given order during a given period. This allows simultaneous transmission and reception over the same line. This is evident by the presence of the AAM4C-A and Advantage Access computer carrier tones on the line while they are in contact.

The AAM4C-A transmits and receives digital information at 2400 bits per second (BPS). During normal operation, while the AAM4-A host panel is communicating with the Advantage Access computer, the host AAM4C-A panel transmits a Periodic Write message once a minute. The Periodic Write message tells the Advantage Access computer that the host panel is still in contact. If the computer does not receive the Periodic Write message at the one minute interval it tries to send the host panel a message for 10 seconds. If there is no response, or an unrecognized response, a *"LINE INTERRUPT"* alarm appears on the operator's screen.

Dedicated Line Communication

Initially, an AAM4C-A host panel using a dedicated line automatically transmits its account identity until it receives acknowledgment. If the Advantage Access computer acknowledges the identity message, the host panel transmits a status message and any alarm or error messages.

Dial Line Communication

After dialing the Advantage Access computer, the AAM4C-A host panel transmits its panel identity until it receives an acknowledgment or the Access PC Response Time expires. If the access computer acknowledges the message the host panel transmits a status message and alarms or error messages, if any.

In later data messages, if the Advantage Access computer does not respond after the host panel transmits the message twice, the panel assumes it has lost communication, goes back on-hook, and redials the access computer.

AAM4C-A Dialing

If the AAM4C-A host panel pulse dials, an on board relay turns on and off at a 10 pulse per second rate. This shorts and opens the Tip and Ring lines, producing a pulse dial (i.e., an 8-digit phone number opens and closes the relay 8 times, etc.).

If DTMF dialing, the AAM4C-A generates 60mS tones in the proper sequence. The DTMF tones pass through the telephone interface, through the relay onto the phone line.

AAM4C-A Dialing Sequence

The AAM4C-A host panel follows a basic dialing sequence when it contacts (or attempts to contact) the Advantage Access computer to report an alarm or message (see Figure 2-1). The host panel first seizes the line from the telephone and loads the primary number (Line #1).

Before dialing, the host panel encounters a “D” (Dial Delay) or “E” (Extend) prefix in the programmed telephone number, and pauses for the optioned time. This allows the telephone company time to apply dial tone on the line. After the delay, the AAM4C-A dials the programmed Line #1 number.

After dialing the last number the AAM4C-A repeatedly transmits its first message. If the Advantage Access computer properly responds to the message before the Access PC Response Time expires, the entire sequence is complete and the panel hangs up.

If the Advantage Access computer does not respond before the Access PC Response Time expires, the AAM4C-A panel:

* hangs up for the programmed On-Hook time
* checks which dialing attempt has been completed
* loads the alternate telephone number
* begins the sequence again (see Figure 2-1).

The AAM4C-A repeats the sequence (alternating the two phone numbers) until it makes contact or completes the fourth dialing attempt. After the fourth dialing attempt the panel goes on-hook for 30 seconds (despite the programmed On-Hook Time) to disconnect any incoming calls that may be preventing contact.

The sequence returns to the programmed On-Hook Time after the fifth dialing attempt and continues dialing until the completion of the seventh dialing attempt. After the seventh dialing attempt, the AAM4C-A automatically defaults to pulse dialing. This is done in case the telephone company is having trouble recognizing the DTMF tones.

If the eighth dial attempt results in yet another contact failure, the system goes into the Abort sequence.

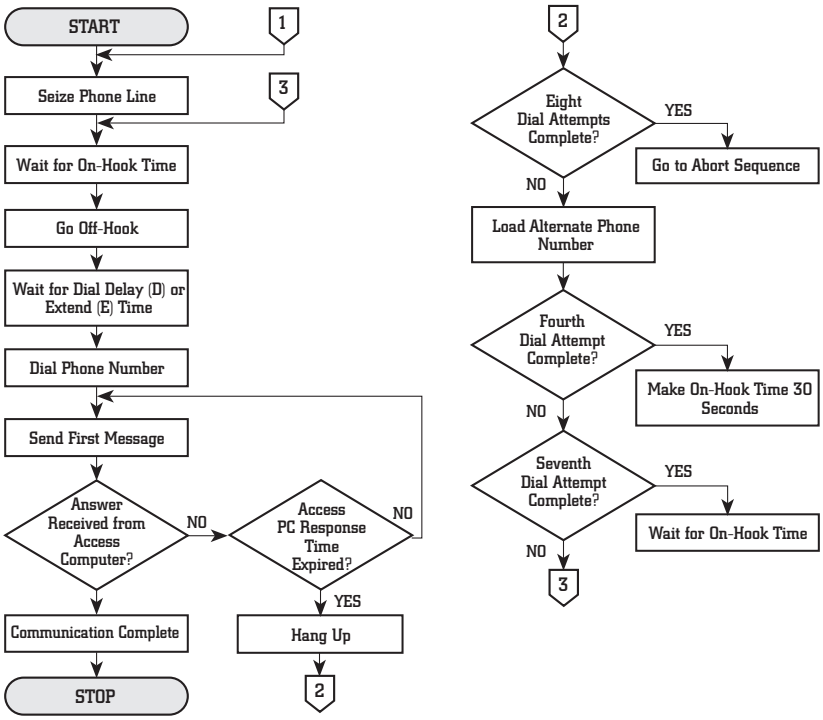


Figure 2-1. AAM4C-A Dialing Sequence

Abort Sequence

If the AAM4C-A cannot contact Advantage Access computer after dialing a total of eight times the system enters the abort sequence shown in Figure 2-2. The AAM4C-A adds an *"ABORTED MESSAGE"* alarm to the original message, showing the aborted contact.

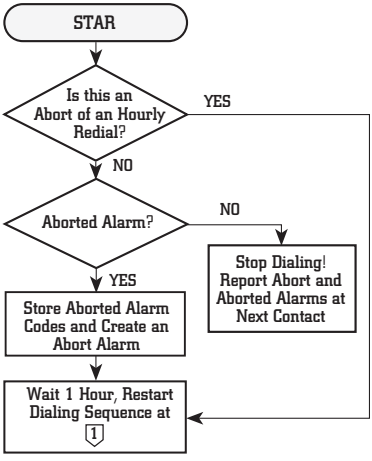
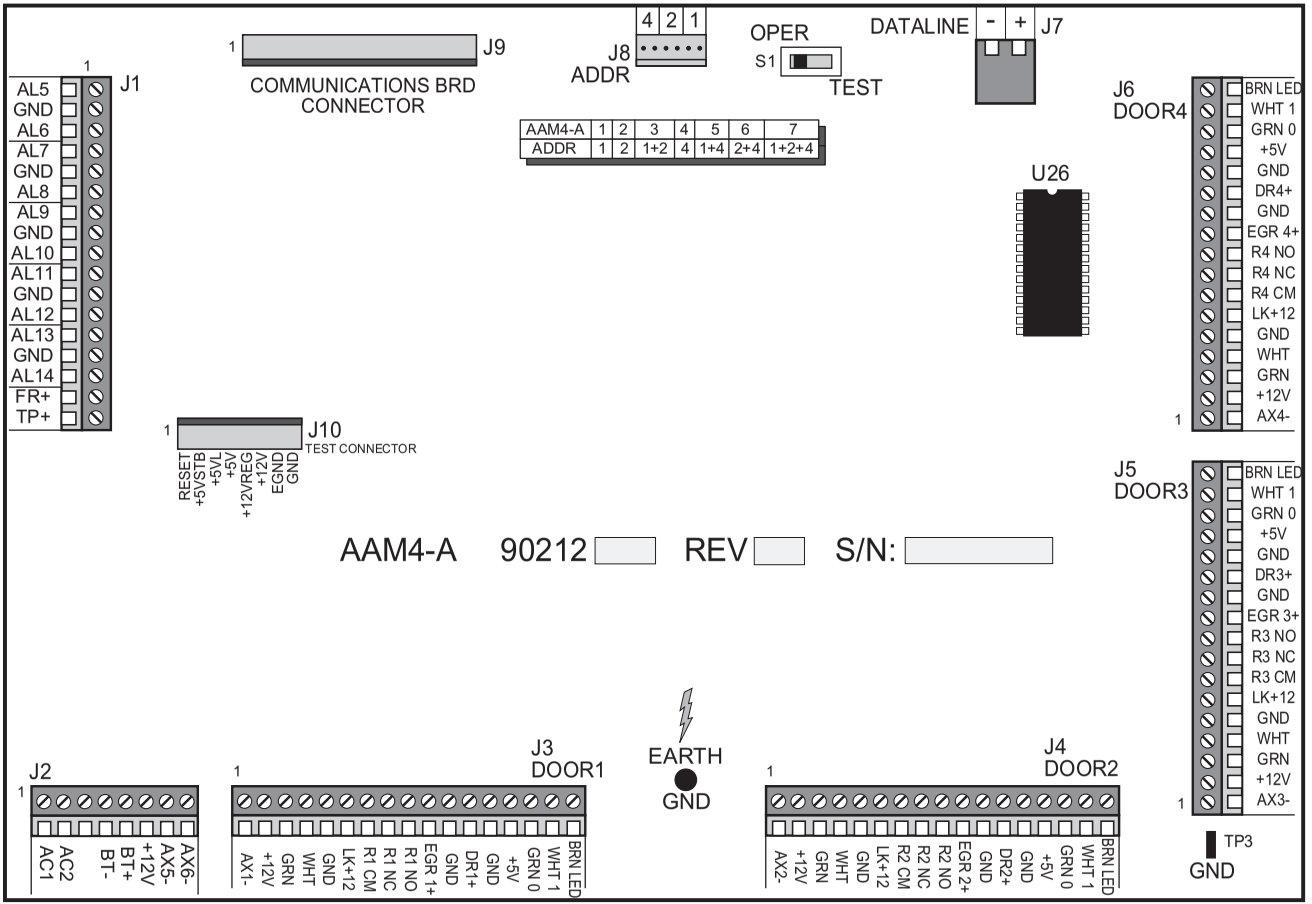


Figure 2-2. AAM4C-A Abort Sequence

Aborted Door Switch Loop Alarms

Door switch loop alarms cause the host panel to dial the Advantage Access computer eight times (as previously discussed). The host panel repeats the dialing sequence once an hour until it contacts the access computer.

After making contact the panel reports any alarms **that are still violated**, the *"ABORTED MESSAGE"* alarm, any new alarms, and displays the violation causing the abort.


J1
AL5
GND
AL6
AL7
GND
AL8
AL9
GND
AL10
AL11
GND
AL12
AL13
GND
AL14
FR+
TP+
J9
COMMUNICATIONS BRD CONNECTOR
J8
ADDR
4 2 1
OPER
S1
TEST
DATALINE
- +
J7
AAM4-A 1 2 3 4 5 6 7
ADDR 1 2 1+2 4 1+4 2+4 1+2+4
U26
J6
DOOR4
BRN LED
WHT 1
GRN 0
+5V
GND
DR4+
GND
EGR 4+
R4 NO
R4 NC
R4 CM
LK+12
GND
WHT
GRN
+12V
AX4-
J10
TEST CONNECTOR
RESET
+5VSTB
+5VL
+5V
+12VREG
+12V
EGND
GND
J5
DOOR3
BRN LED
WHT 1
GRN 0
+5V
GND
DR3+
GND
EGR 3+
R3 NO
R3 NC
R3 CM
LK+12
GND
WHT
GRN
+12V
AX3-
AAM4-A 90212 REV S/N:
J2
AC2
AC1
BT-
BT+
+12V
AX5-
AX6-
J3
DOOR1
AX1-
+12V
GRN
WHT
GND
LK+12
R1 CM
R1 NO
EGR 1+
GND
DR1+
GND
+5V
GRN 0
WHT 1
BRN LED
EARTH
GND
J4
DOOR2
AX2-
+12V
GRN
WHT
GND
LK+12
R2 CM
R2 NO
EGR 2+
GND
DR2+
GND
+5V
GRN 0
WHT 1
BRN LED
TP3
GND

AAM4-A MODULE PINOUTS

Table 2-1. AAM4-A Pinouts

Jack/Pin	Name	I/O	Function	Signal(s) Present
J1-1	AL5	O	Alarm Output	**Supervised Alarm Inputs with 1KEOL installed:** 0 - 1.5 VDC = Alarm or Trouble Condition 1.5 - 2.5 VDC at AL# pin = Normal Condition 3.5 - 5 VDC = Alarm or Trouble Condition **Alarm on Short Alarm Inputs (No 1KEOL)**: 3.5 - 5 VDC = Alarm condition All Alarm Input GND line tied directly to system and Earth ground
-2	GND	I	Alarm Ground	
-3	AL6	O	Alarm Output	
-4	AL7	O	Alarm Output	
-5	GND	I	Alarm Ground	
-6	AL8	O	Alarm Output	
-7	AL9	O	Alarm Output	
-8	GND	I	Alarm Ground	
-9	AL10	O	Alarm Output	
-10	AL11	O	Alarm Output	
-11	GND	I	Alarm Ground	
-12	AL12	O	Alarm Output	
-13	AL13	O	Alarm Output	
-14	GND	I	Alarm Ground	
-15	AL14	O	Alarm Output	
-16	FR+	O	Global Free Exit Input	Input from separate Fire Control Panel (optional). If connected, a fire alarm output from the fire control panel unclocks all Advantage Access Module controlled doors that are optioned for "*Unlock w/Fire Alarm*".
-17	TP+	O	Tamper Loop Output	Tamper for optional case switch or other devices
J2-1	AC1	I/O	AC Input	16.5 VAC in from transformer
-2	AC2	I/O	AC Input	16.5 VAC in from transformer
-4	BAT-	I	"Battery ""+"""	12 VDC in from backup battery
-5	BAT+	O	"Battery ""-"""	12 VDC in from backup battery
-5	+12V	O	Auxiliary Power	+12VDC power for Auxiliary Output or other devices.
-6	AX5-	I	General Purpose Auxiliary Output	Programmable Auxiliary Output control pin.
-7	AX6-	I	General Purpose Auxiliary Output	Programmable Auxiliary Output control pin.

Table 2-1. AAM4-A Pinouts

Jack/Pin	Name	I/O	Function	Signal(s) Present
J3-1	AX1-	I	Auxiliary Input "-"	Programmable auxiliary output control pin
-2	+12VDC	O	Auxiliary power	+12 VDC power for C-3000 keypads or auxiliary input
-3	GRN	I/O	Keypad communications	TX/RX Data to/from C-3000 keypads
-4	WHT	O	Keypad clock	Timing Clock to C-3000 keypads pin 3
-5	GND	I	Keypad/Auxiliary device ground	Ground to C-3000 keypads pin 4 / door locks
-6	LK12+	O	"Lock Power "+"	+12 VDC
-7	R1CM	I	Lock Relay Common	Voltage Dependent on Wiring
-8	R1NC	O	Lock Relay N.C.	Voltage Dependent on Wiring
-9	R1NO	O	Lock Relay N.O.	Voltage Dependent on Wiring
-10	EGR1+	O	"Exit (egress) Switch Loop "+"	5VDC w/N.O. or 0VDC w/N.C.
-11	GND	I	Exit switch/Door switch loop GND	System ground for exit switch / Door monitor switch
-12	DR1+	O	Door Loop "+"	2.5VDC (Supervised)
-13	GND	I	Card reader ground	System ground for card reader(s)
-14	+5VDC	O	"Reader Power "+"	5VDC
-15	GRN 0	I	Reader '0' Channel	5VDC
-16	WHT1	I	Reader '1' Channel	5VDC
-17	BRN LED	O	Reader LED Output	0VDC or 5VDC w/color LEDs
J4,J5&J6	**The pins on jacks J4, J5 and J6 are identical to jack J3 pinouts**			
J7-1	"+"	I/O	"Dataline "+" pin"	The RS-485 dataline to other AAM4-A modules or optional LCD keypads. ALWAYS observe polarity.
-2	"-"	I/O	"Dataline "-" pin"	
J8-1	+	O	Address Strap #1+	+5VDC (Open)
-2	-	I	Address Strap #1-	0V
-3	+	O	Address Strap #2+	+5VDC (Open)
-4	-	I	Address Strap #2-	0V
-5	+	O	Address Strap #4+	+5VDC (Open)
-6	-	I	Address Strap #4-	0V

Table 2-1. AAM4-A Pinouts

Jack/Pin	Name	I/O	Function	Signal(s) Present
J9	**Optional Communications Board connector**			
J10-1	Reset	I	Processor Reset	Processor reset pin.
-2	+5VSTB	N/A		+5VDC Standby
-3	+5VL	N/A		+5VDC Logic
-4	+5VDC	N/A		
-5	+12VREG	N/A		
-6	+12VDC	N/A		
-7	EGND	N/A		Earth Ground
-8	GND	N/A		Circuit Ground

INTRODUCTION

The information in the first portion of this section will allow the service technician to perform routine service on Access Systems. Topics and procedures included in this section are:

* Servicing Access Systems
* System Testing
* Troubleshooting Techniques
* Troubleshooting Charts

To avoid the loss of any alarm activity, have the operator perform an Activity Log upload if any of the following occur:

- you are about to service the account
- the operator receives a ***"AC POWER DOWN"*** alarm (a total power loss would result in the loss of all activity data).

SERVICING ADVANTAGE ACCESS SYSTEMS

Advantage Access Systems are easily serviced using only a voltmeter and a telephone handset. Since one board contains all the circuitry, troubleshooting is a matter of determining if the problem is with the host panel, an access module, the wiring, or a peripheral device (i.e., card reader, keypad, door lock, etc.) is malfunctioning.

ALARM INPUTS

You can check the AAM4-A alarm loop input (AL#) pin voltage with a DC voltmeter, relative to the ground test point (GND, "TP3") without disconnecting any wires or connectors.

Table 3-1 lists the voltages and conditions of various AAM4-A alarm loop configurations.

Table 3-1. Loop Voltages ("AL#" to "GND")

Loop Type & Condition	0 to 1.5V	1.5 to 3.5V	3.5 to 5.0V
Open			X
Short	X		
End-of-Line		X	
N/C Alarm			X
N/C Normal (Supv)		X	
N/C Trouble (Supv)	X		
N/O Alarm	X		
N/O Normal (Supv)		X	
N/O Trouble (Supv)			X
N/O & N/C Alarm (EOL)	X		X
N/O & N/C Normal (EOL)		X	

SYSTEM TESTING

The test equipment required for system testing is a standard multimeter such as a "Fluke 21" or equivalent. Also recommended is an C-3000 keypad for system testing. (See the AAM4-A installation instructions for proper C-3000 keypad wiring.)

AAM FUNCTIONAL TEST

C-3000 Keypad Tests

"* 1" Command

(AAM4C-A Only) - Pressing the C-3000 "*", then pressing and holding the "1" key displays the status of doors 1 through 4 on C-3000 LEDs #1 through #4. C-3000 LED numbers 5-8 display the status of panel alarm loops 5-8.

LEDs lit while holding "1" indicate a violated door (e.g., #1 LED lit = Door #1 status violation, #2 lit = Door #2 status violation, etc.).

While holding "1", C-3000 LEDs flashing at a once per second rate indicate a fault on the corresponding door's status loop. LEDs flashing five times per second indicate that a status violation occurred at the corresponding door since last arming (cleared at next system arming).

"* 2" Command

Pressing the C-3000 "*", then pressing and holding the "2" key displays the status of alarm loops 9 through 16 (16 being the Tamper loop) on the keypad #1 through #8 LEDs. LEDs lit while holding "2" indicate a violated alarm loop (e.g., C-3000 #1 LED lit = Loop #9 violated, #2 lit = Loop #10 violated, etc.).

While holding "1", C-3000 LEDs flashing once per second indicate a supervisory alarm on the corresponding alarm loop. LEDs flashing five times per second show that an alarm occurred on the corresponding loop since last arming (cleared at next system arming).

"* 4" Command

Pressing the C-3000 "*", then pressing and holding the "4" key will display the status of AAM4 functions. These status indications are:

- #1 Lit - Indicates the panel detects an options error. Downloading will correct this problem.
- #2 Lit - Indicates the board EPROM has failed. The board or the EPROM will need replacement.
- #3 Lit - Indicates external memory failure. Requires a board replacement.
- #4 Lit - Indicates dial line loss
- #5 Lit - The AAM4C-A has gone through the abort sequence and could not contact the Advantage Access computer.
- #6 Lit - A Battery Trouble condition exists.
- #8 Lit - A Battery Problem condition exists.

"* 5" Command

Pressing the C-3000 "*" key and holding the "5" shows the status of the AAM auxiliary outputs. LED numbers correspond to auxiliary output number. A lighted LED indicates an active auxiliary output.

"* 6" Command

Pressing the C-3000 "*****" key, then pressing and holding "**6**" displays the power status of all AAMs. For example, LED #1 lighted shows an AC or battery problem with AAM #1, LED #2 = AAM #2, etc.

"* 7" Commands

Pressing the C-3000 "*" and "7" keys, then pressing and holding any of the "1-7" keys displays the status of the controlled doors (e.g., key 1 = AAM #1, key 2 = AAM #2, etc.). While holding the number key corresponding to an AAM, C-3000 LEDs 1-4 show the status of doors 1-4.

The C-3000 LEDs will display one of the following door switch loop conditions:

* On Steady = Violated
* Fast Flash = Alarm Memory
* Slow Flash = Trouble Condition
* OFF = Normal

"* 9" Command

Pressing the C-3000 "*****" key, then pressing and holding "**9**" displays the integrity of each AAM's options. C-3000 LED #1 lighted shows AAM #1 has bad options, LED #2 lighted = AAM #2 bad options, etc.

"* 0" Command

Pressing the C-3000 "*****" key, then pressing and holding "**0**" displays any AAM that cannot communicate. C-3000 LED #1 lighted shows AAM #1 cannot communicate, LED #2 lighted = AAM #2 cannot communicate, etc.

NOTE**: The C-3000 "SYSTEM READY" light turns off (preventing system arming) if <u>any</u> AAM experiences a communication problem.**

LCD Keypad Tests

During normal access system operation the LCD keypad display looks similar to the display shown in Figure 3-1.

If an access module in the system goes down or has an options failure the keypad display changes to show a status message (see Figure 3-2). Pressing the keypad "*****" key displays the first status message (see Figure 3-3).

If two or more system modules have problems pressing the *Next* key displays the next status message (see Figures 3-4 and 3-5). Pressing the *Prior* key displays the previous status message, and pressing the *Quit* key displays a *"SEND TEST SIGNAL"* prompt.

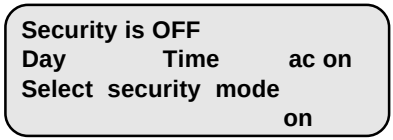


Figure 3-1. LCD Normal Operation Display

Figure 3-2. LCD Status Display

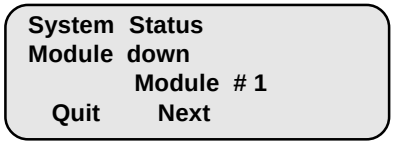


Figure 3-3. LCD Status Message Display

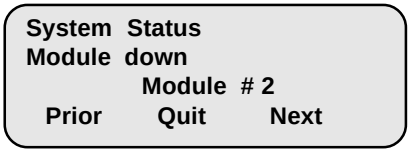


Figure 3-4. LCD Status Message Display

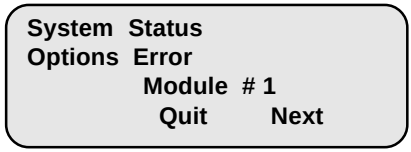


Figure 3-5. LCD Status Message Display

TROUBLESHOOTING TECHNIQUES

Effective troubleshooting requires knowledge of the equipment, a systematic approach to the problem, and confidence. You can break troubleshooting down into three very basic steps: Observation, Isolation, and Solution.

OBSERVATION

Observe all the symptoms of the malfunction and note all details. If the malfunction is intermittent, attempt to duplicate it. Question the Operator or user for specifics on the where, when, and how the malfunction occurred. Obtain all information on how the system was operating before the problem occurred, did anything abnormal occur before the malfunction?

Compile the information and define the problem. Be as precise as possible. For example, instead of "the access system doesn't work," the problem may be more accurately defined as "The system will not unlock the door after reading a card."

ISOLATION

After gathering information, isolate the problem to a functional area (see *Theory of Operation* for functional descriptions or refer to the troubleshooting charts). This is not to say that you have to define a specific component, but the functional area, such as the keypad interface or alarm loops.

Consider other parts of the system that can affect this area. For example, the keypad must transmit a command to the AAM4-A before it can carry out the request.

After isolating the problem to a functional area, look for the obvious. Make an in-depth visual inspection, look for incorrect jumpers, loose or disconnected cables and connections. Often what seems a serious problem is something very simple. If a visual inspection does not identify the problem, use the appropriate test equipment to isolate the problem to a replacement part.

SOLUTION

A misconception of many technicians is that the replacement of a faulty board or component is the *solution* to a problem. On the contrary, replacement of the faulty unit is only half the solution. The total solution will prevent the malfunction from recurring.

When the system is operating properly and you have corrected the entire malfunction, return it to normal condition and verify proper operation.

TROUBLESHOOTING CHARTS

All Advantage Access System troubles can generally be classified into one of six categories:

* Communication Problems (Table 3-2)
* Keypad Problems (Table 3-3)
* Key & Card Reader Problems (Table 3-4)
* RS-485 Communications Problems (Table 3-5)
* Alarm Loop and Alarm Sensing Device Problems (Table 3-6)
* System Level Problems (Table 3-7)

The charts give the Technician insight on the possible causes of many common system problems. The charts are designed in a “Problem, Probable Cause, and Recommended Repair” type format. Charts list the probable causes and repair of each malfunction in descending order: the most probable cause listed first, followed by less likely causes.

Consider all circumstances before replacing any parts. The charts define many common problems, but hardly cover all possible problems.

Table 3-2. Communication Problems

Symptom	Probable Cause	Recommended Repair
A C-3000 "* 0" command indicates an AAM4-A communications failure.	Improper address jumper configuration on AAM4-A.	Check jumper configuration against options. Correct if necessary
	Communication link polarity is reversed.	See the installation diagram and ensure proper polarity between AAM and AAM4-A host.
	Defective AAM4-A.	Replace AAM4-A board.
C-3000 "* 9" command indicates LED #1 lit.	AAM #1 options are bad.	Redownload options to this AAM4-A.
Advantage Access computer never proceeds past *SENDING MESSAGE #1* during a download.	No power to AAM4-A.	Check and correct the power to the AAM4-A.
	Incorrect Host panel options.	Check the AAM4-A's *EQUIPMENT* options for the number of installed AAM4-A modules.
	AAM4-A addressed incorrectly.	Check AAM4-A address jumper(s). See the options sheet and installation diagram.
	Improperly wired communication bus.	Wiring to host panel is open, shorted or cross wired. Check wiring, polarity, and connection.
	Incorrect firmware level.	Check and correct if necessary.
	Improper wiring.	On power up, reader LEDs should flash until AAM4-A communicates with AAM4C-A host. If not, check power and communication wiring.
	Bad AAM4-A board.	Replace AAM4-A and test.
No bi-directional message at Comm. Board T&R when an alarm trips in OPER mode.	Incorrect wiring and/or options.	Correct wiring, check options.
	Defective AAM4-A.	Replace AAM4-A board.
No tones heard at Communication Board T & R (unit dead).	AC power not connected.	Check transformer or reconnect.
	Transformer defective.	Replace transformer.
	Bad AAM4-A power supply.	Verify voltages at J11 +12VREG, +5V, & +5VSTB test points. If not present replace AAM4-A module.
No tones heard at Communication Board T & R, but power is okay.	Unit microprocessor in the wrong state.	Disconnect J2 to remove power momentarily to reset the AAM4-A and often clear problem.
	ROM plugged in incorrectly or has bent pins.	Verify ROM is inserted with notch up and check all pins for proper insertion.
	Communications Board connected one pin off.	Remove and properly reseat Communications Board.
	Defective AAM4-A board.	Replace AAM4-A board.
No carrier at Comm. Board T & R with no phone line connected.	Defective Communications Board.	Replace Communications Board.
	Defective AAM4-A board.	Replace AAM4-A board.
AAM4C-A will not call Advantage Access computer back after receiving a *Callback* message.	Wrong *UPLOAD* number programmed into AAM4-A.	Check options. If incorrect, will require a service call to initiate downloading.
	A FAX shares the line.	Must use different phone line.
	UPLOAD number changed in Advantage Access computer.	Panel options were not updated after a line change. Requires service call to download.
	Attempting to download the wrong account file.	Panel with good options will only accept a download from its own account file.

Table 3-2. Communication Problems (Continued)

Symptom	Probable Cause	Recommended Repair
Error 06 on the Operator's screen.	Transmission error while downloading options.	Retransmit the options.
AAM4C-A Host does not answer to receive options.	Host not addressed as 0.	Rempve any address jumpers from the Host.
	Computer not programmed with correct telephone number.	Check options and correct if necessary.
Dedicated line Host panel will not talk to Access Computer modem.	Modem and panel not in sync.	Allow one to two minutes for Host and Access Computer modem to synchronize.
	Uneven telephone line resistance.	Place a 500 ohm resistor across Tip and Ring on the Host panel's Communications Board. Allow one to two minutes for Host and Access Computer modem to synchronize.
No dial tone.	Incorrect telephone wiring.	Correct telephone line wiring.
	Defective AAM4-A board.	Replace AAM4-A board.
Unit does not dial.	Defective Communications Board.	Verify relay clicks and gets dial tone Verify handset dials out and house phone is off during dial. Before dialing, with handset verify dial tone on line. Listen for pusles or DTMF for part of dial. Replace Communications Board if dials, but cannot meet other conditions.
	Defective AAM4-A board.	Replace AAM4-A.
Host panel dials but cannot contact the Advantage Access computer.	Wrong numbers programmed.	Program with correct telephone line number.
	Wrong dialing type programmed.	Correct and redownload options if trying to use DTMF on a pulse line.
	CSR time too short.	Reprogram longer response time and redownload.
Works for pulse dial, but not DTMF.	Wrong dialing type programmed.	Correct and redownload options if trying to use DTMF on a pulse line.
	Defective Comm. Board on host panel.	Check for communication tones on T&R. If not present replace the Communications Board.
	Defective AAM4-A.	Replace AAM4-A host panel.
Contacts Advantage Access computer with pulse dialing, but no communications.	Defective Communications Board on host AAM4-A.	Check for communications tones on T & R. If not present replace the Communications Board.
Contacts Advantage Access computer, but hangs up before communicating.	CSR time too short.	At Comm. Board T & R, verify computer carrier is on line at least 5 seconds before AAM4-A hangs up. If not, reprogram a longer CSR time.
No tones heard at Communications Board T & R (unit dead).	AC power not connected.	Check transformer or reconnect.
	Transformer defective.	Replace transformer.
	Bad AAM4-A power supply.	Verify voltages at J11 +12V, +5V, & +5VSTB test points. If not present replace AAM4-A.
No tones heard at Communications Board T & R, but power is okay.	Unit microprocessor in the wrong state.	Disconnect J2 to remove power momentarily. This resets the AAM4-A and often clears problem.
	ROM plugged in incorrectly or has bent pins.	Verify ROM is inserted with notch up and check all pins for proper insertion.
	Defective AAM4-A board.	Replace AAM4-A board.
No carrier at T & R with no phone line connected.	Defective AAM4-A board.	Replace AAM4-A board.

Table 3-3. Keypad Problems

Symptom	Probable Cause	Recommended Repair
C-3000 dead, no C-3000 LEDs lit.	Incorrectly wired.	Check and correct wiring. Check C-3000 pin 1 for +12V and pin 4 for GND.
	Open PTC on AAM4-A.	Locate and correct overcurrent condition to reset PTC.
	Defective C-3000.	If several keypads in Zone, remove keypads until one connected. If LEDs do not light, replace last connected keypad. Reconnect keypads until defective one found.
	AAM4-A not optioned for a keypad at this door.	Check *DOOR* options and ensure the AAM4-A is optioned for a keypad at this door.
	Defective AAM4-A.	Check power / ground out of AAM4-A to keypad. If not present replace AAM4-A and recheck.
All C-3000 LEDs always ON.	Host panel in TEST mode.	Ensure Host panel is in the OPER mode.
	AAM4-A not optioned for a keypad at this door.	Check *DOOR* options and ensure the AAM4-A is optioned for a keypad at this door.
	Incorrect wiring.	Check keypad wiring and correct if necessary.
	Defective C-3000.	Replace keypad.
	Defective AAM4-A.	Replace AAM4-A board.
C-3000 *WAIT* LED flashes after two Arm/Disarm tries.	Invalid employee number entered twice in succession.	Check *DOOR CODES* and ensure correct number of employee number digits. Ensure the employee is entered into the database.
Key entries cause no C-3000 beeps.	Bad wiring.	Check wiring and correct if necessary.
C-3000 keypad *SYSTEM READY* LED is always off.	Alarm loop violation exists.	Use keypad * 1 or * 2 test command to find violated Host loop. Use * 7 commands to find violated AAM4-A loop. Use * 0 to find a down AAM4-A board. Correct violation.
	Defective C-3000 keypad.	Replace C-3000s one at a time to locate bad keypad.
LCD keypad dead, nodisplay.	Incorrectly wired.	Check and correct wiring. Check for +12V and GND at keypad connector.
	Open PTC on AAM4-A.	Correct overcurrent condition to reset PTC.
	Defective LCD or wrong type.	If several keypads in Zone, remove keypads until one connected. If display does not work, replace last connected keypad. Reconnect keypads until defective one found.
	AAM4-A not optioned for a keypad at this door.	Check *DOOR* options and ensure the AAM4-A is optioned for a keypad at this door.
	Defective AAM4-A.	Check power and ground out of AAM4-A to keypad. If not present replace AAM4-A and recheck.
LCD keypad displays a *Call for Service* message.	Wrong version of LCD keypad installed.	AAM4-A requires that the LCD keypad Fast/Slow jumper be ***INTACT!*** If jumper cut or not present, install new/correct keypad.
	Keypad address jumper incorrectly installed.	Check options and set address jumper for proper LCD keypad address.
	RS-485 comm. problem.	See *RS-485 Communications Problems.*
	Two keypads with same address.	Check keypads to ensure each has a unique address. Correct as necessary.

Table 3-4. Key and Card Reader Problems

Symptom	Probable Cause	Recommended Repair
Card reader LEDs do not change states on a card swipe.	Incorrect card format optioned or unrecognized card format.	Check options and ensure correct card format. Verify number of bits in card.
	Card not optioned.	Check options or try a valid card.
	Door is already unlocked.	LED will not change states if door is unlocked.
	Reader's data pair reversed.	Check wiring polarity at AAM4-A board and reader.
	Invalid site code.	Site code must match and be the same for all cards. If optioned as 0, site code is ignored.
Reader LED turns from Red to Green momentarily, but door does not unlock.	Door Unlock time set to 0.	Check options. If necessary, option and download correct Door Unlock time.
	Optioned for Card + Keypad entries.	Door is optioned for Card + Keypad entries. Change this option to "NO" for reader only access.
Reader LED is Green when door locked, Red when door is unlocked.	Door relay wired incorrectly.	Correct the door relay wiring on the AAM4-A module.
Reader LED is always Yellow.	Door optioned as inactive.	Check options. Reader may be for Arm/Disarm only.
Reader LED turns Yellow on a card swipe.	User's Access Level is invalid.	Check the AAM4-A Access Level options. Validate user for this shift.
	User restricted from this door.	Check user's access authority in the access computer's employee database.
	Incorrect Arm/Disarm level.	Check user's Arm/Disarm level in the access computer's employee database.
Card reader LED off.	Incorrect field wiring.	Check connections and meter cable. Correct if necessary.
	Incorrect reader options.	Check options and correct if necessary.
Inconsistent card reads.	Wire run exceeds max distance.	Check wiring distance. Correct as necessary.
	Not using shielded cable.	Use shielded cable.
	Prox reader not powered from +12VDC source.	Check and correct reader's power source.

Table 3-5. RS-485 Communications Problems

Symptom	Probable Cause	Recommended Repair
All RS-485 modules and devices log down.	Bad module taking data bus down.	Disconnect all RS-485 modules. Monitoring RS-485 with a handset, listen for ***continuous*** *noise.* Bursts of noise indicates communications failure. Reconnect modules one at a time while listening for *continuous* data. Troubleshoot the module that interrupts the continuous data flow.

Table 3-6. Alarm Loop and Alarm Sensing Device Problems

SYMPTOM	PROBABLE CAUSE	RECOMMENDED REPAIR
Inoperative alarm loop.	Incorrect loop options.	Check options. Redownload if necessary.
	Incorrectly wired loop.	Check wiring and correct. Test continuity.
	Defective Detector.	Check detector operation. Replace as necessary.
	Defective AAM4-A board.	Check 5V on loop output pin with loop open. If not present replace AAM4-A board.
	Bent connector pin.	Straighten pin.
Constant Trouble alarms (Supervised Loops Only).	Field wiring defective.	If "+" pin is not at 2.5 V, wiring is open or control panel is defective.
	No EOL resistor in loop.	Install 1K resistor at farthest detector in loop.
GBD-A is sends constant *TROUBLE* alarms.	Incorrectly wired.	Check ground wires.
	TRIP setting too low.	Recalibrate GBD-A glass break circuit.
No glass break alarm (GBD-As only).	No power to GBD-A.	Verify 10-15V to GBD-A. Check wiring.
	Sensitivity too low.	See GBD-A calibration procedure.
Constant Glass Break alarms.	Wired incorrectly.	Check wiring and correct.
	Sensitivity too high.	See GBD-A calibration procedure.
Inoperative loops with End of Line resistors.	Incorrectly optioned loops.	Check options. Redownload if required.
	Incorrectly wired loop.	Check wiring diagram and correct.
	EOL resistor missing.	Install 1KEOL at farthest detector in loop. Loop voltage should be 2.5VDC.
	Defective detectors.	Check each detector's operation.
	Defective AAM4-A board.	Check for 5V on loop output with nothing connected to the loop. If not present, replace the AAM4-A board.
	Bent connector pin.	Straighten pin.

Table 3-7. System Level Problems

Symptom	Probable Cause	Recommended Repair
Exit switch inoperative.	Exit switch not optioned.	Ensure the door is optioned for an exit switch.
	Incorrect wiring.	Refer to the installation diagram and correct.
	Free Exit door incorrectly optioned.	Ensure door options include *Free Exit* ***YES***.
	Incorrect door unlock time.	Ensure door unlock time is not set to zero.
Door unlocks, then immediately relocks.	Door unlock time too short.	Increase the optioned door unlocked time in the AAM4-A *DOOR* options.
Door stays unlocked.	Incorrect options.	Check options. Door is probably optioned for *Door Unlocked While DISARMED*.
	Incorrect options.	Check options. Door is probably optioned for *Door Unlocked During SHIFT #*.
	Incorrect exit switch wiring.	Ensure the exit switch wiring matches the AAM4-A *DOOR* options.
	Defective AAM4-A.	Replace AAM4-A board.
Doors do not unlock during a FIRE alarm.	Host panel alarm loop incorrectly optioned.	MUST option loop *FIRE BELL/BEEP* on alarm.
Battery Problem alarm reported to access computer.	Open PTC.	Locate and correct overcurrent condition.
	Incorrect battery polarity.	Switch the battery leads.
	Defective battery.	Verify charger voltage is approximately 13V between the battery connection points with battery disconnected. If voltage is okay, replace battery.
	Defective AAM4-A board.	If no 13V (see above) replace AAM4-A.
Access computer receiving excessive *DOOR FORCE* alarms.	No exit device installed at door.	Install exit device on door or option for *FULL* security level.

This list provides brief descriptions of various terms relating to Advantage Access Systems (AAM4C-A and AAM4-A):

ABORT
To cut short or break off an action or operation. In Advantage Access systems abort is the term used to signify the units inability to contact the Advantage Access computer after 8 dialing attempts.

ACTIVE
In use, in full operation.

ANNUNCIATOR
A unit that announces an alarm with audible and/or visual indications.

ANTI-PASSBACK
Requires that a valid entry request by a card be followed by a valid exit request by the same card before the panel allows the card another valid entry.

ARMING
Puts the panel and its attached modules into full security (ON) mode, or *Coded-out*.

AUXILIARY OUTPUT
A fully programmable AAM4-A output. Auxiliary outputs can be optioned to perform a range of functions under given conditions.

BUFFER MEMORY
A computer unit used for temporary storage of data before transmission to another designation.

ADVANTAGE ACCESS COMPUTER
The computer running the Advantage Access for Windows™ software monitoring the access system.

C-3000
Control 3000 Keypad. A keypad that communicates with the AAM4-A. The C-3000 allows the user to arm or disarm the panel and attached modules, arm to the Intermediate Security level, send Disregard, send Emergency Duress, test the unit, or gain entry.

CLOSED CIRCUIT ALARM
An alarm caused by a break or opening (opening a door) in a closed loop.

CODE
Any secret number or signal which identifies the individual operating the access system. An access code, for instance.

CONTROLLED EXIT
A programmable form of exit that requires that a user's card be read and verified prior to granting an exit from the controlled area.

DATABASE
Account information which is stored in the Advantage Access computer's memory.

DIAL-UP PHONE LINE
The switched phone network. Allows calling to or receiving calls from any party on the network.

DISARM
Puts an access panel and its attached modules into OFF mode or "Coded-in".

DOWNLOAD
A process of transmitting options from the Advantage Access computer to a host AAM4C-A panel and/or its associated AAM4-A modules.

EGRESS
A term commonly used in security meaning "exit."

EMI
Electromagnetic Interference. An electromagnetic phenomena which, either directly or indirectly, can degrade the operation of an electronic system.

EPROM
Erasable Programmable Read Only Memory chip. An integrated memory device that can be programmed with information, erased, and programmed again. Information programmed onto this chip may only be "read" by the computer.

FAIL-SAFE
A term commonly used to describe a door lock configuration. "Fail-Safe" means that the door unlocks during a total system power outage (or other problem).

FAIL-SECURE
A term commonly used to describe a door lock configuration. "Fail-Secure" means that the door remains locked during a total system power outage (or other problem).

FREE EXIT
A programmable form of exit that allows users to freely exit the controlled area without a card read. The user presses an exit switch to unlock the door.

FULL-DUPLEX

Simultaneous transmission of data by both ends of a system over a two-wire network. Advantage Access systems communicating with the Advantage Access computer operate in full-duplex mode.

GLOBAL ANTI-PASSBACK

Allows AAM4-A users to enter and exit any doors selected as **G**lobal in the Host panel or its associated modules. *See Anti-Passback.*

HALF-DUPLEX

Transmission of data by only one device at a time over a two-wire network. AAM4-A modules communicates with the host panel in half-duplex mode.

INACTIVE

Turned off. In a temporary state of inactivity.

INHIBITED

Turned off, ignored.

INTERMEDIATE SECURITY

A level of security between Armed and Disarmed. Permits certain alarm loops (i.e., perimeter) to be monitored for detection of intrusion while someone is still in the facility.

I/O

Input/Output.

LCD KEYPAD

The LCD keypad is a 15 button wall-mounted keypad in its own enclosure. The keypad contains a four line, 20 character per line *Liquid Crystal Display* (LCD) that displays the system's status in plain English.

LED

Light Emitting Diode. A type of message display.

LOCAL ANTI-PASSBACK

Requires entry and exit through the same set of doors (e.g., Doors 1 and 2, **or** Doors 3 and 4). *See Anti-Passback.*

MODEM

Modulator/Demodulator. A device that converts a typical two-level computer signal into a form suitable for telephone network transmission (and vice-versa).

MODULE

An unit added to a system to provide additional capabilities.

OPEN CIRCUIT ALARM
An alarm caused by closing a normally open circuit. Panic and hold-up alarms are usually open circuit alarms.

PIN
Personal Identification Number. Also called a User I.D. Number.

RAM
Random Access Memory. A semiconductor memory device whose contents **can** be altered by the processor.

ROM
Read Only Memory. A semiconductor memory device whose contents **cannot** be altered by the processor. The contents remain intact when power is removed.

SHUNTED
Turned off. Bypassed.

STATE
The condition of an account whether the premises are occupied (IN) or not occupied (OUT).

SWIPE
The act of passing an access card through a card reader.

TIME PERIOD
A programmable time used by AAM4-A to determine when a "Time Shift" is active. Each Time Period has a single start and end time that is enabled on selected days of the week and holidays.

TIME SHIFT
A programmable time frame that consists of one or more "Time Periods." Each user is assigned to a Time Shift, allowing that user access at only certain times and days.

USER NUMBER
A user code appended to the access code that allows users to arm/disarm a Secure system without the use of a card.

VOM
Volt-Ohm-Meter. A test instrument with several ranges, for measuring voltage, current, and resistance.

WIRING, INTERCONNECTING
Those conductors used to connect protective devices in a burglar alarm system.

USING THE TECHNICIAN'S MODE

The Advantage Access panel "Technician's Mode allows technicians or installer to set or reset the system clock (i.e., switching from daylight savings time, etc.).

Use the following steps to enable the Technician's Mode:

1. From the C-3000 at the desired door, enter the Technician's access code and press ENTER.
2. All C-3000 keypad LEDs light when the system enters the Technician's Mode.

Re-enter the Technician's access code on the keypad to disable the Technician's Mode and return the access panel to normal operation.

SETTING THE TIME

The Access panel clock time can be set while in the Technician's Mode. You must enter the system time in a *military* format (i.e., 05:30=5:30 AM, 14:50=2:50 PM).

NOTE: The Advantage Access computer automatically updates the Host Panel's time with each contact.

1. Enable the Technician's Mode at the desired door.
2. At the C-3000, press the keypad keys to set the 4-digit time (2-digit military hours followed by 2-digit minutes), then press ENTER. (i.e., **H H M M + ENTER**)
3. To return the system to normal operation re-enter the Technician's access code on the keypad.

NOTE: This does <u>not</u> update the time at any other AAM4-A board. The procedure must be repeated at every AAM4-A connected to a Host.

ACCESS PANEL STATUS ANNUNCIATION

WITH C-3000 KEYPADS

The status of all AAM4-A modules connected to a host AAM4C-A panel can be checked at any time at any **Host** panel C-3000 keypad.

"* 1" Command

(AAM4C-A Only) - Pressing the C-3000 "*", then pressing and holding the "1" key displays the status of doors 1 through 4 on C-3000 LEDs #1 through #4. C-3000 LED numbers 5-8 display the status of panel alarm loops 5-8.

LEDs lit while holding "1" indicate a violated door (e.g., #1 LED lit = Door #1 status violation, #2 lit = Door #2 status violation, etc.).

While holding "1", C-3000 LEDs flashing at a once per second rate indicate a fault on the corresponding door's status loop. LEDs flashing five times per second indicate that a status violation occurred at the corresponding door since last arming (cleared at next system arming).

"* 2" Command

Pressing the C-3000 "*", then pressing and holding the "2" key displays the status of alarm loops 9 through 16 (16 being the Tamper loop) on the keypad #1 through #8 LEDs. LEDs lit while holding "2" indicate a violated alarm loop (e.g., C-3000 #1 LED lit = Loop #9 violated, #2 lit = Loop #10 violated, etc.).

While holding "1", C-3000 LEDs flashing once per second indicate a supervisory alarm on the corresponding alarm loop. LEDs flashing five times per second show that an alarm occurred on the corresponding loop since last arming (cleared at next system arming).

"* 4" Command

Pressing the C-3000 "*", then pressing and holding the "4" key will display the status of AAM4 functions. These status indications are:

- #1 Lit - Indicates the panel detects an options error. Downloading will correct this problem.
- #2 Lit - Indicates the board EPROM has failed. The board or the EPROM will need replacement.
- #3 Lit - Indicates external memory failure. Requires a board replacement.
- #4 Lit - Indicates dial line loss
- #5 Lit - The AAM4C-A has gone through the abort sequence and could not contact the Advantage Access computer.
- #6 Lit - A Battery Trouble condition exists.
- #8 Lit - A Battery Problem condition exists.

"* 5" Command

Pressing the C-3000 "*" key and holding the "5" shows the status of the AAM auxiliary outputs. LED numbers correspond to auxiliary output number. A lighted LED indicates an active auxiliary output.

"* 6" Command

Pressing the C-3000 "*****" key, then pressing and holding "**6**" displays the power status of all AAMs. For example, LED #1 lighted shows an AC or battery problem with AAM #1, LED #2 = AAM #2, etc.

"* 7" Commands

Pressing the C-3000 "*" and "7" keys, then pressing and holding any of the "1-7" keys displays the status of the controlled doors (e.g., key 1 = AAM #1, key 2 = AAM #2, etc.). While holding the number key corresponding to an AAM, C-3000 LEDs 1-4 show the status of doors 1-4.

The C-3000 LEDs will display one of the following door switch loop conditions:

* On Steady = Violated
* Fast Flash = Alarm Memory
* Slow Flash = Trouble Condition
* OFF = Normal

"* 9" Command

Pressing the C-3000 "*****" key, then pressing and holding "**9**" displays the integrity of each AAM's options. C-3000 LED #1 lighted shows AAM #1 has bad options, LED #2 lighted = AAM #2 bad options, etc.

"* 0" Command

Pressing the C-3000 "*****" key, then pressing and holding "**0**" displays any AAM that cannot communicate. C-3000 LED #1 lighted shows AAM #1 cannot communicate, LED #2 lighted = AAM #2 cannot communicate, etc.

NOTE**:** **The C-3000 "SYSTEM READY" light turns off (preventing system arming) if <u>any</u> AAM experiences a communication problem.**

WITH LCD KEYPADS

During normal access system operation the LCD keypad display looks similar to the display shown in Figure B-1.

If an access module in the system goes down or has an options failure the keypad display changes to show a status message (see Figure B-2). Pressing the keypad "*****" key displays the first status message (see Figure B-3).

If two or more system modules have problems pressing the *Next* key displays the next status message (see Figures B-4 and B-5). Pressing the *Prior* key displays the previous status message, and pressing the *Quit* key displays a *"SEND TEST SIGNAL"* prompt.

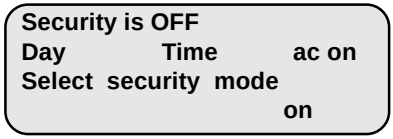


Figure B-1. Normal Operation Display

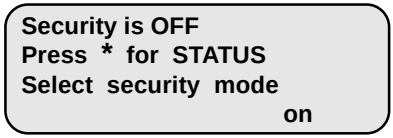


Figure B-2. Status Display

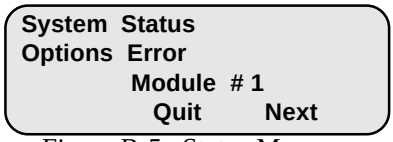


Figure B-5. Status Message Display

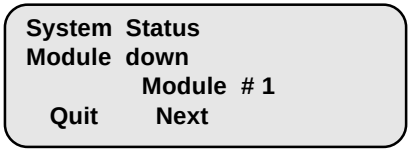


Figure B-3. Status Message Display

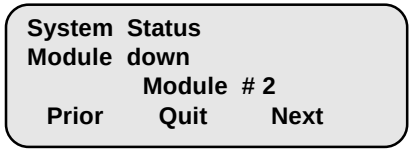


Figure B-4. Status Message Display

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